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THE ASSOCIATION OF AMERICAN GEOGRAPHERS, 1903-1923*

ALBERT PERRY BRIGHAM

This writing does not profess to be a history of the Association of American Geographers; rather will it try to set forth some reminiscent comments on the meaning of its origin and ongoing during a period of twenty years. A vast total of scientific work done in America during the nineteenth century, had of necessity been of a geographic nature, though not always recognized as such. During the last decade of the century there was a growing recognition of the fact that in secondary and higher education geography deserved a place of its own. Following European example it was coming to be understood that the science was too inclusive and too important to hover in fragments under the shadow of other subjects.

AN ASSOCIATION SUGGESTED.—Those of us who well remember the influence of William Morris Davis and other physiographers in that decade, the unfoldings of geomorphological study, the new school programs, and the beginnings in some of the universities, were not surprised when Professor Davis presented at St. Louis in 1903, a paper of historic significance. He was Vice-President and Chairman of Section E of the American Association for the Advancement of Science, for that year. The subject of his address was, "Geography in the United States."†

We cannot write the alternatives to a history that has been enacted but we may surmise that at some time and in some way the geographers of America would have associated themselves, if this paper had never been read. What we are more interested in is the fact that the reading of it, and quiet work done in sequence to it, led to our existence.

Professor Davis began by citing a startling fact; that while geography

* Read by title at the annual meeting of the Association at Cincinnati, Ohio, December 28, 1923.

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† An article entitled "The Progress of Geography in the United States," by Professor William Morris Davis, will appear in the December number of the ANNALS.

was named for twenty years in equal rank with geology, no vice president of the section for twenty years, or even in the fifty years of this scientific fellowship, had given an address concerned with geography. He then proceeded to fling geography under the eyes or into the ears of the assembled geologists.

Touching the paper only here and there, he said that geography could then lead to no professional career outside of school teaching; that there was therefore little teaching in the colleges and universities; that there was no organized body of mature geographical experts; that in the absence of such a body geography suffered from lack of the aid that workers receive through mutual encouragement. Then he asks, "How can we remove these impediments of low educational rank, no professional career, and no professional organization?" He proposes in answer to the last item of his query, the establishment of a society like the Geological Society of America, with criteria of expert training and ample publication as a basis of membership.

Professor Davis names certain groups from which such a membership could be recruited. Among these were teachers of geography. He was sure that "a significant number of acceptable members" could here be found. Next he named the members of national and state weather services, and third, the members of many government bureaus of state and nation, in geology, hydrography, biology and ethnology and men engaged in statistical investigation. In this latter diverse field he expected the greater number to be found. He could then hardly foresee perhaps the extent to which geologists, both investigators and teachers, would seize the new opportunity and become the formative force in the first decade of the new society's life.

That geography is so large and diversified a body of knowledge that no person can become expert in more than a fraction of it, was well enunciated in the words, "The essential content of geographical science is so large that the successful cultivation of the whole of it demands all the energies of many experts." While happily we now have a good number of men, who more nearly approach a full and unified status as geographers, we have here nevertheless a principle important to be recognized in all time to come. Without a standard, inflexible in quality indeed, but elastic in range, we should stand to lose much of our rightful heritage.

Near the end of the St. Louis address we find the following: "The various recommendations that I have made are likely to remain in the air, or at most to secure response from isolated individual students, unless those who believe that the adoption of these recommendations would promote the scientific study of geography are willing to give

something of their time and thought toward organizing a society of geographical experts,—an American Geographers Union. From such a union I am sure that geography would gain strength."

Professor Davis finally outlined certain important conditions, namely; a suitable definition marking the boundaries of the subject; members to include those with whom geography was primary, or at least of not less than secondary interest, with a good measure of published work; and, "The independence of the union thus constituted, of all other geographical societies." The first and most difficult of these conditions we have never met formally, but earnest effort, with real progress, has gone into the coördination and unifying of our science. In the other matters we have consistently acted on the principles proposed.

THE ORGANIZATION OF THE ASSOCIATION.—As I have not before me the early records of this Association, I do not remember ever to have known, nor do I suppose there is any narrative of what transpired between the St. Louis meeting and a parlor conference later held in the City of Washington. I do remember something of that conference,—that I found there a group of the masters in earth science and that a fellowship and an interest in the new project pervaded the meeting, which boded well for the future of geography in America. Many of the actors in that modest scene are gone, but there the organization of the Association was perfected and the first obvious fruit of what had been done appeared in an unpretending program of about twenty papers, at the end of the year 1904, in Philadelphia.

At that meeting Professor Davis presided and he read there a short prologue bearing the title, "The Opportunity for the Association of American Geographers." That address is to be found in the Bulletin of the American Geographical Society for February, 1905. I shall not attempt to report it, beyond quoting one conditional prophecy, which I think a score of years has amply fulfilled. "If we are really successful in thus associating the students of the organic and inorganic sides, the human, economic, zoological, botanical, climatic, oceanographic and geological sides of geography, and in leading them to work in view of and in coöperation with each other, and to present their results in each others presence, we shall have taken an important step in the development of geographical science, for it cannot be doubted that students on the different sides of our subject have as a rule lived too far apart."

THE CONSTITUENT MEMBERS.—It was my great privilege to be closely associated with the men, and actively engaged in the work,

of the Association for many years following 1904, and I affirm without hesitation that the greatest strength and progress of the society lay in the new and strong fellowship of friendliness and professional awakening that characterized our correspondence and our annual gatherings. I see no reason to modify a long standing conviction that the simple and all-embracing formula, or if you please, policy, of such a body is that its members come together and give to each other samples of the best they are doing or trying to do.

I have gone over the list of constituent members; about sixty making up the roll. The prognostications of the founder have been well met. There was a group, not large, of teachers. There were, and this number has increased, some of the ablest representatives of climatology, also creative minds dealing with distributional phases of botany and zoology and a very considerable number of geologists and physiographers. Not a few of these have in the years, perhaps without knowing what they were doing, so yielded to the thrall of geography, that the center of their activities and reputation has swung into that field.

Few of the constituent members were at that time recognized officially or in the general consciousness as being geographers, yet it was a thoroughly geographic organization. Our Association will as time goes contain an increasing number of those who by training and practice are geographical specialists. It will also, it is to be hoped, ever embrace some, who, centering in other branches of science, share with us certain parts of their territory and have such sympathetic interest in the aims of geography as to keep their sciences in organic and mutually helpful relations with our own.

Some of the most eminent of our first members, after helping us to lay solid foundations, have passed away. Our memorial roll holds no greater name than that of Grove Karl Gilbert. It is possible to see how this eminent geologist, who will ever be one of the masters in physiography, matured his geographic ideas during his relationship with us. Having himself, I think in our first meeting, given a paper relating to glacial, or aqueo-glacial sculpture, it remained for him, presiding over us in one of our Baltimore meetings, to utter a refined but no less pungent criticism of certain papers which he thought too geological. And unless my memory greatly fails, he pronounced that meeting as the best scientific conference he had ever seen. Henry Gannett was known for many years as a geographer and his genial nature, and long service as geographer of the United States Geological Survey are remembered by all our older members. Another geologist was W J McGee, who delighted in the human applications of earth science and did eminent service in many fields. We find

him offering papers to our Association on such topics as "The American Deserts and Their Reclamation," and "The Prospective Conquest of the Mississippi River." Like his chief, Major J. W. Powell, he won double distinction by adding to earth science, conspicuous attainments in ethnology.

Among the constituent members and early presidents was Angelo Heilprin, combining an almost encyclopedic knowledge in the great field of the older natural history, in geology, biology, and geography, including his daring exploits in the Arctic and the Caribbean. No exposition is needed of great achievements in our science, if I but name, Raphael Pumpelly, explorer, Rollin D. Salisbury, distinguished physiographer, writer, teacher and administrator; Ralph S. Tarr, teacher, physiographer, glacialist, author, and an indefatigably loyal and active member of this Association; and A. Lawrence Rotch, a rare and tireless spirit, who was not one of our presidents because he modestly refused to be named for that honor.

If I should call the roll of our living constituent members, your comment on many of the names would be that they were and are expert on some side of geology, but most of the names suggest to you ineradicable and ever emerging geographic interests; in the philosophy of geography, in wide ranging and long pursued regional investigation, in economic geography and ethnology, in exploration and education, and finally in the appreciation of organic relations as central in geography.

If I should go farther along the list and name another group, your minds would at once recall distinguished achievements in philosophical and educational leadership in geography, masterful work in anthropogeography and exploration, and large contributions in the field of biological geography.

Other names suggest to us achievements on many sides of our subject, distinguished work in climatology, terrestrial magnetism, cartography and topography, in statistics, in editorial and journalistic geography, and in international scientific relations.

Our Association is under abiding obligations to one of our constituent members, whom I shall name, whose loyalty and service have been unceasing. I refer to our retiring secretary,* Richard E. Dodge, who as Councillor, Editor, President, Secretary, and contributor to our programs, has with charity, patience, sound judgment and personal sacrifice fostered the life and sought the upbuilding of this association.

* Retired at the close of 1923.

THE PRESIDENTS OF THE ASSOCIATION.—We have had nineteen presidents, including President-elect Marbut. Four of these, Gilbert, Heilprin, Salisbury and Tarr are no longer with us. The following exhibit of our history may be of interest to our members; the years, places of meeting and the presidents are named. It may be noted that H. H. Barrows is the only president thus far, outside of the constituent membership.

1904—Philadelphia	W. M. Davis
1905—New York	W. M. Davis
1906—New York	Cyrus C. Adams
1907—Chicago	Angelo Heilprin
1908—Baltimore	G. K. Gilbert
1909—Boston	W. M. Davis
1910—Pittsburgh	H. C. Cowles
1911—Washington, D. C.	R. S. Tarr
1912—New Haven	R. D. Salisbury
1913—Princeton	H. G. Bryant
1914—Chicago	A. P. Brigham
1915—Washington, D. C.	R. E. Dodge
1916—New York	Mark Jefferson
1917—Chicago	R. DeC. Ward
1918—Baltimore	N. M. Fenneman
1919—St. Louis	C. R. Dryer
1920—Chicago	H. E. Gregory
1921—Washington	E. C. Semple
1922—Ann Arbor	H. H. Barrows
1923—Cincinnati	E. Huntington

To the writer of this sketch, the geographic distribution of members, officers, and meetings does not seem of cardinal importance, but there may be a degree of interest in a few of the most general facts of this nature. Outside of isolated single members, the members have tended to congregate in or near Boston, New Haven, New York, Philadelphia, Baltimore and Washington on the eastern seaboard, and in Chicago, Madison and Ann Arbor in the Central region. Thus it has been inevitable that the larger number of educational and scientific centers should keep a majority of members in the East.

Of the nineteen presidents New England has furnished six, the North Central region six, the Middle Atlantic States four, the City of Washington two, and the South Central region one. Three have been chosen from the University of Chicago, three from Yale University and two from Harvard University.

THE MEETINGS OF THE ASSOCIATION.—There have been twenty annual meetings, of which seven have been held in the North Central states, six in the Middle Atlantic states, five in Washington and Baltimore, and two in New England. Chicago has had four meetings, New York three, Washington three, and Baltimore two.

The principle of independence as regards other societies as enunci-

ated by the founder has been observed. We have affiliated with other societies when convenient, and for a short period enjoyed the helpful coöperation of the American Geographical Society, during which period a number of interesting spring meetings were held.

Those who were members of the Council in 1910 will not forget the serious discussion of that time regarding possible publication. Funds were limited and the difficulties were not small, but the opinion prevailed that the dignity and progress of the Association dictated at least a modest attempt. No one I think has regretted that beginning, and much laborious and careful editorship has brought worthy results. More could well be done if by growth of membership, increase of dues, or some timely munificence, funds could be made available for extension.

The National Council of Geography Teachers.—In 1914, a movement took form to organize the forces of geographic instruction in the schools throughout the United States; the result was the formation of the National Council of Geography Teachers with its efficient secretary, its numerous state Councils, its well developed annual programs, and its adoption and promotion of the Journal of Geography. It may at least be said that our Association has through the National Council, made a considerable contribution toward higher standards of teaching everywhere in America.

The Transcontinental Tour.—The Association had no official relation to the notable Transcontinental Excursion of 1912. It is proper however to observe, that the founder of this Association was the inspirer and director of that activity of the American Geographical Society and that its American personnel consisted mainly of our members. In spite of the ruthless break in scientific fellowship due to war, it remains true that American as well as European geography and geographers gained much from that great essay in putting a congress of geography on wheels for two historic months.

The Association and its Influence.—It remains to observe that we have of necessity been a small society. Our standards have been strict and looking over our record with a fairly full knowledge of men and events, the present writer believes that few mistakes have been made in the selection of members. Smallness of numbers, and the sense of youth have in the past given us a modest estimate of ourselves, mutual deference to the opinions of our fellows and a high degree of close personal fellowship. Nothing is more to be desired than that these be permanently associated with our life and activities, as the leading exponent of geography on this side of the Atlantic.

Small as we have been we have taken a recognized place among the

societies of continental scope. Geography has had through us much legitimate publicity, locally in many centers of education and on all programs of the American Association and of affiliated societies. It is no small gain that biologists, anthropologists, historians, sociologists and all other disciples of science know that there is a society of expert geographers.

Our meetings have always been held with, or in proximity to important universities. More than a dozen educational centers, with their presidents and faculties have received object lessons which have aided them in learning, as there was need to learn, the meaning and value of our science. The Association has helped geographers and promoted geography. During twenty years geography has taken a place never held before in the educational and public consciousness of America. That we have contributed largely to that result we need not hesitate to affirm. What we have achieved should cast its light on the possibilities of the future and set us forth in close fellowship to win the larger harvest of coming years.

A CENTURY OF GEOGRAPHIC EDUCATION IN THE UNITED STATES*

CHARLES REDWAY DRYER

CONTENTS

GEOGRAPHICAL WORKS OF THE EARLY NINETEENTH CENTURY.—If the American people in the early part of the nineteenth century lacked interest or intelligence in the subject of geography, it was not for want of available information. It was a period when books on geography were written, published and presumably sold and read, of which the number, scope and monumental character are a wonder and a puzzle to the present day student. A collection and bibliography of them would be well worth making. Brief notice of two or three (one before 1800) will suffice for the purpose of this paper.

New and Complete System of Universal Geography, by John Payne, with additions, corrections and improvements by James Hardie, A. M., printed and sold by John Low at the Shakespeare's Head, Water St., New York, 1798-9, 4 vols.

This is an American edition of an English work, and although called "a large and comprehensive abridgment," runs to nearly 2,500 octavo pages, approximately 1,500,000 words. There are forty folding maps and a few illustrations. It was sold by subscription and the names of about 1,500 subscribers are given, all living within 100 miles

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of New York and Philadelphia. Mill's *International Geography* (1899), just a century later, contains about 550,000 words and probably has not had so large a sale in proportion to population as had Payne's *Universal Geography.*

A less ambitious but still formidable work was the *New Geographical, Historical and Commercial Grammar and Present State of the Several Kingdoms of the World,* by William Guthrie, the astronomical part by James Ferguson, F. R. S., with 28 correct maps. Second American Edition, 2 vols., Johnson and Warner, Philadelphia, 1815.

This book runs to more than 1,200 pages, about 730,000 words. The voluminous character of these works is due in part to the astronomical and historical matter incorporated in them. The plan of the authors seems to have been to tell everything known about every part of the world, making wholesale use of information from books of travel, voyages, encyclopedias, official reports and every other available source, so that a geography of that period took the place of several classes of the literature of today.

A book of a type more familiar to us was *A New System of Modern Geography,* designed for the use of the Seminaries, Schools and Academies of the United States, by Elijah Parish, D.D., Minister of Byfield, author of a Compendious System of Universal Geography, etc., etc., ornamented with maps. Second edition, 1 volume, published by E. Little & Co., Newburyport (Mass.), 1812.

"Though geography is an earthly subject, it is a heavenly study." —*Burke.*

It is a small octavo volume of 366 pages and two maps, and comprises about 140,000 words, or somewhat less than the standard high school text of today. Each political division is described under a series of topics, situation and extent, boundaries, coast, rivers, lakes, mountains, face of the country, climate, soil and productions, minerals, manufactures, canals, bridges, turnpikes, commerce, inhabitants, government, literature and education, religion, chief towns, curiosities, learning, but not in invariable order. The present day reader is impressed by the attention given to religion and curiosities. The style is clear and graphic, and the book still makes interesting reading. Many striking quotations might be made. Purely astronomical, historical and other extraneous matter is generally eliminated, and the contents come well within the scope of geography as conceived by this Association. Frequent citations of authorities are given in footnotes. Aside from poor paper and lack of illustration Parish's text presents the geography of its day as creditably as do the standard texts of the twentieth century.

TEXTBOOKS AS MATERIAL FOR HISTORY OF EDUCATION.—Materials for a history of geographical education in the United States are scant and not easily accessible. They consist chiefly of personal recollections, records of which are few and scattered, and of school textbooks, which, of all classes of literature, are at once the most abundant and the most ephemeral. Of all the millions of volumes used in the schools of today, not one copy in a thousand will be preserved or given shelf room in private or public libraries. Textbooks seldom appear in bibliographies and seem to be the pariahs of the world of books. It remains for some bookworm to devote months or years to a thorough search in the archives of publishing houses, public libraries and private collections for the scant remains of geographical texts. From such sources a fairly complete history might be compiled.

There is no better index of what is being done in any school subject than that furnished by the textbooks used. Authors of successful books must take into account the general character of the demands made by the schools, and these are determined by the stage of development of the subject, and by the qualifications of the teachers and school authorities. In order to find a publisher and secure adequate sales, the textbook must not fall behind the standards of the time. Again, textbooks are usually written by the more enterprising and able teachers of the subject, each of which is impelled by the conviction that he can produce a better book than his rivals have done. Consequently, each new book is likely to be better, at least in some respects, than its predecessors. Thus a constant improvement, in one direction or another, is secured. The books are all tested and sifted in the schools, and the fittest, that is those best adapted to the general and local conditions, survive.

The value of the textbook as an index of education is enhanced by the fact, that it, more than anything else, determines the character of the instruction given. Outside the colleges and universities, not one teacher in a hundred does much more than the textbook indicates. Hence, for the purposes of this paper, it has seemed to the writer that a brief sketch of the evolution of the geographic textbook during the past seventy-five years would be pertinent and illuminating.

TEXTBOOKS FOR ELEMENTARY SCHOOLS.—During the fifth and sixth decades of the nineteenth century many new textbooks of geography for various grades of the common school began to appear, of which those of Colton, Cornell, Mitchell, Monteith and Warren were most popular. In the descriptive text questions were set at the foot of each column, and the book closed with many pages of review questions. Nothing could be easier for the teacher. She had only to read the

printed questions and hear the pupils repeat the answers memorized from the text. For more ambitious teachers and classes, minute directions were given for copying the maps of the book on cards, paper, slate and blackboard, providing excellent exercises in the memory of forms. The dominant, if not the sole purpose of author and publisher was to present the material in the best form for memorization by the pupil.

A brief sketch of Cornell's series will suffice to indicate the general character of these texts. It consisted of six books, *First Steps in Geography, Primary Geography, Intermediate Geography, Grammar School Geography, High School Geography and Atlas,* and *Outline Maps with Key.*

Cornell's Primary Geography, by S. S. Cornell, D. Appleton & Co., N. Y., copyrights of successive editions from 1854 to 1875, Quarto 6 x 8, 100 pp., 63 cuts, 21 maps uncolored, containing very few features, towns or names and reduced to simplest detail. The following extract from the preface suggests some puzzling questions:

"The present work is the fruit of a necessity in geographical education that has been very keenly realized by the Author during several years of experience as a public teacher. In the study of this material science, she has found it peculiarly difficult, even with the best class books on the subject, to array it with the same perspicuity to the mind of the pupil that may be imparted to more metaphysical studies."

The 118 lessons consist of questions most of which require only the briefest answers. Each map is provided with a "Memory's Aid," consisting of a list of names of countries, capitals, islands, rivers, etc., apparently to be memorized. On each continent and the United States, there is a page or two of "Descriptive Geography," made up of half a dozen lines of bald statement about each country and state, perhaps designed "to array them with perspicuity," of which the following is a fair sample:

"England, a very important country of Europe, is situated on the island of Great Britain, south of Scotland. London, the capital city, is the largest and richest city in the world."

Cornell's Grammar School Geography, D. Appleton & Co., copyrights 1858 to 1874, Quarto 8 x 10, 122 pages, 31 large maps, 31 small maps, 35 cuts, mostly of animals. There are two sets of maps of the United States, 5 for copying with little detail, 16 towns being shown in Indiana, and 11 for reference on a larger scale with more detail, 150 towns being shown in Indiana. A one page map and one page of text are given to the United Kingdom, one fourth of a page to England and four lines to London. "It differs from the Inter-

mediate Geography in being fuller in map and descriptive matter, presenting a greater number of localities to be memorized."

Cornell's High School Geography, D. Appleton & Co., copyrights 1856 to 1868, Octavo, 405 pages. Few illustrations.

The main body of the text is a description, or in some cases a mere enumeration, of the natural and human features of continents, islands and countries. Political geography occupies 322 pages. Review questions on North America fill twelve pages of fine print. The West India Islands occupy 21 pages. England occupies three pages including a cut of Windsor Castle, London seven lines. 78 pages are given to mathematical and physical geography. There are 14 rules for describing natural divisions, with definitions and examples suggestive of a Latin grammar, and 18 problems to be solved by the use of the globe. Elaborate map lessons consist of questions on *Cornell's Comprehensive Atlas to High School Geography,* Quarto 10½ x 12½, containing 27 large scale maps colored politically. The map study of Indiana calls for the location of 40 towns. This text and atlas probably furnished the most complete outfit for the study of geography extant in its day. They were adopted for use in the schools of Vermont, New Hampshire, Wisconsin, Ohio, Indiana, California and other states.

Of primary texts the following contrasted types are worthy of notice.

The Young Geographer—a Book for Beginners, by C. B. Stout & W. W. Smith, Ivison, Phinney, Blakeman & Co., 1866, 128 pp., Quarto 5 x 7½, 15 maps colored politically, 78 small cuts. There are 138 lessons each of about seven brief questions and answers, and 16 pages of review questions without answers, many of them on the maps. The preface states that "the aim of the book is to lay such a foundation of definitions and facts as to render subsequent acquisitions easy and pleasant. A part of the text is placed in smaller type than the answers to the Questions, and this though embodying much useful information, may be omitted from the recitations; but it should be read carefully by each student."

A Primary Geography, by James Cruikshank, LL. D., Wm. Wood & Co., N. Y., 1867, Quarto 88 pages, 10 maps, rather crude.

"Lesson 1. This Beautiful World.

"1. We cannot make any picture that is half as beautiful as this world is, when the green grass springs up and the flowers bloom in the gardens and fields, and the birds sing in the groves.

"2. The bright sun by day makes us glad, and at night the stars shine like diamonds in the sky.

"3. And even when cold winter comes, and snow covers the ground,

it is only that the earth may rest, and the trees and flowers sleep till the warm spring-time comes again.

"4. This world is very large. You cannot see much of it at once—only a little way along the road, or across the fields; and other people that you have never seen live on it, some of them far away.

"5. No one man has ever seen all the earth; and you could not see it all, if you were to travel all your life. But a great many people have lived and traveled over different parts of it, and have written about it, and we may learn by reading their books."

At intervals up to recent times the sentimental story type of text-book has been put into competition with the formal-statement-of-facts type, but the former has never met with more than very moderate success, probably because it is so difficult to teach and recite from.

Dr. Cruikshank goes on to tell the children, "God made the world for man to live on, and has fitted it for man's convenience and comfort, giving the food that is best for him to eat, the air to breathe without which he could not live, and making storms and tempests to purify the air, and bring the refreshing rain upon the earth." The good-God-in-Nature has been a popular and profitable theme for writers of geographic text-books. Neither earthquakes, volcanoes, tornadoes, plague, pestilence nor famine ever daunt them. It perhaps reached its climax in a text current as late as the 90's which states that the saltness of the sea and the ocean currents prevent the waters from becoming corrupt, otherwise the sea would become a stagnant, fetid expanse, breeding disease and pestilence. "Nothing which the eye can behold on this earthly sphere shows the goodness and wisdom of the Almighty more than the great ocean currents. It has all been done for the comfort and happiness of man. Even the sea is made to yield to man's necessities, and under laws given and enforced by divine power, it keeps the earth pure and healthful, and it makes it a pleasant place in which to live. Thanks be to God for His unspeakable gifts!"

In 1866, Arnold Guyot wrote in his preface to *The Earth and Its Inhabitants* (*Common School Geography,* Charles Scribner, N. Y. 1867): "Bare memory, unintelligent and therefore not retentive, instead of being the useful servant, is the sole master and despot of the mind. Purely mechanical memorizing makes knowledge a burden, and of instruction nothing remains but the most empty and passing show. Gradual progress of knowledge has three main stages, first a general outside view of the object or field, then a study of all its parts, then a knowledge of laws and principles. The first is perceptive, the second analytic, the third synthetic generalization. Cultivate the

pupil's power of thought by the exercise of his own intelligence. Thorough comprehension should precede committing to memory."

That these psychological laws are fundamental and eternal is of less consequence than the fact that here was a series of geographic textbooks based upon something better than mere "Memory's Aids," and in consequence, the latter very rapidly disappeared from the field. Guyot's books contained combined physical and political maps with relief shown in two colors and by hachures. Forms of relief were placed before river systems, climate before plants and animals, the geography of nature before the geography of man, which is regulated by the former. This was geography as seen by a trained scientist instead of by a narrow-minded teacher or an editorial hack.

About the same time that Guyot was writing at Princeton, Captain Matthew F. Maury, after a distinguished career as oceanographer and meteorologist, and as an officer in the Confederate navy, while living in straitened circumstances in London, wrote a series of school geographies for American use. (*Elementary Geography* and *Manual of Geography*, University Publishing Co., N. Y., 1870.) They were clear and scientific without being technical and written in a simple, easy style, which makes them eminently teachable and recitable. The green-tinted relief maps or pictures of models are good and attractive. The tissue of the books is rather unsubstantial, and attempts to revise them are apt to furnish illustrations of the parable of sewing new cloth into old garments; but the two books, substantially unchanged are still on the active list, and are sold by tens of thousands of copies annually. This vigorous life of more than 50 years is perhaps unequaled in the annals of modern textbooks.

EXPERIENCES OF G. STANLEY HALL AND THE WRITER.—It was from some such book as Cornell's that Stanley Hall learned geography in a Massachusetts country school of the late 50's, of which he writes: "Outside the three r's, geography was, I think, introduced earlier, given more time, and was less disliked than any other study in the old district school. In my boyhood geography gave us our only glimpses into the field of science."* Definitions, boundaries, capitals, chief cities, names and locations of natural features, sometimes recited in rhythm set to music, were stamped in by the drawing and coloring of many maps. About the same time, in a little cobblestone schoolhouse among the morainic hills of Western New York, the writer was pursuing, with the connivance rather than with the help of the teacher, a similar course of map drawing. The result was a mental outline

* G. Stanley Hall, *Life and Confessions of a Psychologist*, p. 485.

of the world which he could no more forget than the alphabet or the multiplication table. In view of the ignorance of place geography recently shown by American college students, the teaching of the essentials of geography was more effective seventy-five years ago than it is at present.

Evolution and Mutation of Textbooks.—Text books of the type described increased in number and grew in bulk and richness of content. Dry statements of fact gave way, more or less, to descriptive story telling in attractive literary style, which clothed the bones of geography with flesh and gave it blood, life and beauty. Maps and pictures multiplied and improved in quality, and the thin and arid youth of the grade textbook underwent a natural and healthy development into the perhaps overbuxom and sumptuous favorites of today. Authors and publishers vie with one another in producing books which in accuracy and fulness of statement, charm of literary style and beauty of letter press, shall be above criticism, and every resource of the engraver's art is used to illustrate the text with maps, charts and pictures. The standard grade textbook in geography has grown to be a volume of 400 to 500 quarto pages, containing 500 to 600 illustrations, and the child is given the opportunity to survey the world through two such volumes before he is fourteen years old.

All the grade textbooks of geography which have been widely used in the last seventy-five years belong to the same genus, but have been differentiated, not only from their predecessors, but to a less extent from their contemporaries. Now and then a mutant has appeared and started development in a new direction.

Report of the Committee of Ten.—In 1894 an event occurred which affected the teaching of geography almost as profoundly as the pleistocene ice age affected the distribution and evolution of plants, animals and men. The report of the Conference on Geography to the Committee of Ten of the National Educational Association shifted the subject from a political to a physical basis. Of the nine members of the Conference four were eminent geologists. The field work of Powell, Dutton, Gilbert, Russell and others on the arid western plateaus, and that of Davis on Appalachian structure and drainage, had furnished the material for a new science of land forms, based upon rock structure and sculpture. By the use of these materials Davis had formulated his illuminating conception of the physiographic cycle, and the new science of geomorphology had been developed to a degree of perfection comparable with that of meteorology and oceanography. The Conference report gave this science its proper place as coequal with the other members of the physical-geographical group, and its

relative importance was exaggerated because it was new. In the emphasis laid upon land forms, scientific explanation, and field and laboratory work, the report of the Conference was revolutionary. For the first time the writer of a geographical textbook dared to make his description of the earth more than skin deep, and to discuss the structure, origin and development of mountains, plateaus, valleys and plains. It became safe to mention block mountains, coastal plains, drowned valleys, ice sheets and glacial drift.

The first grade text to respond to the new influence was that of Frye (1895). While this book fell short of meeting in full the demands of scientific geography, its treatment, not only of land forms, but also of winds, ocean currents, and what would now be called the ecology of plants and animals, was a notable advance beyond its predecessors. Probably its immediate popularity and extensive use for twenty-five years were not due to its scientific features as much as to its illustrations, which included numerous so-called relief maps, or photographs of models with greatly exaggerated relief, maps showing the distribution of economic products, and a bewildering profusion of pictures in great variety, generally paged in groups of from three to six.

In 1897 appeared the Natural Geographies of Redway and Hinman, the forerunner of a type in which two authors of varying scientific and pedagogic qualifications collaborate. They were characterized by the use of the star shaped polar projection of the world maps, layered relief maps in harmonious tints used as a base for political features, and the displacement of wood engravings by the more graphic half tones from photographs. Physical geography was more freely dealt with than in any previous series, and the pupil was introduced to such concepts as the continental plateau and shelf, rising and sinking coasts, shore forms, structural sections, weathering, valley erosion, peneplains, heat belts bounded by isotherms in place of zones bounded by tropics and polar circles, cyclonic storms, and natural regions, not only physiographic, but also of rainfall, and plant and animal life. The organization and style were rather formal, scientific and mature.

In 1900, Tarr and McMurry, both eminent university professors, one of physical geography and the other of elementary education, brought out textbooks worthy of such authorship. They contain solid chunks of pure geology and pure history, which scarcely blend with the geographic magma. The organization is pedagogical rather than logical, in accordance with the principles of child psychology. Each topic is treated with much fulness of detail, for the purpose of making it not only a statement of facts, but at the same time an interesting story, thus converting a lesson book in large degree into good literature.

In each case the expanded statements are grouped around a central thought which is printed in the margin. Suggestions are given to the pupil how to study the text, such as to read over several pages to get the run of the story before attempting to master the subject. References are given to hundreds of books and articles for supplementary reading. This expanded treatment, basing its value upon the liberal selection and artistic arrangement of many details, rather than upon the orderly statement of essential facts to be memorized, completed the evolution of the geographic textbook from a skeleton memorandum to a piece of full bodied literature. To make the transformation more striking, the books were at first published in octavo form, and were outwardly indistinguishable from textbooks in other subjects. Ten years later the exigencies of illustration compelled the adoption of a medium sized quarto, which seems to be the standard form which a combined text and atlas must assume.

The text of Dodge (1904) is a conspicuous example of a geography for use in grade schools, organized and carried out on a physical basis. His *Principles of Geography* constitutes an admirable presentation of the elements of physical geography, and his *Comparative Geography of the Continents* is broadly and consistently physiographic. Commercial and industrial activities are shown by means of maps and graphs with little discussion in the letter press. Descriptions of industrial processes, and all other subjects of doubtful geographic canonicity are conspicuous by their absence. There is hardly a statement in the book which does not bear upon the relations of life to physical environment.

The text of Brigham and McFarlane (1916) may be cited as a generalized type, not in the zoological sense of being primitive, but rather as a composite photograph, to which all phases of geography contribute, and in which they are harmoniously blended. Neither physical, political, historical, economic nor pedagogic features are given undue prominence. There is no suggestion of a fad, nostrum or hobby, of a new method or favorite device. The spirited style, and the artistic balance and proportion displayed in the text are reinforced by the notable clearness of the letter press, and the beauty of the combined physical and political maps.

The text of Atwood (1920) for the upper grades marks the first appearances in an elementary book, of natural regions as an organizing principle, and these are assumed to be purely physiographic or geological, without consideration of climate or vegetation. Of these regions there are four classes, lowlands, uplands and plateaus, old worn down mountains and young rugged mountains, with subdivision in the United

States, where the physiographic regions of the Fenneman committee[1] are used. A natural region, or a part of it, is first described, and then the states or countries which occupy it; as the northern Appalachian Highlands and New England, the Coastal Plain and the Southern States, the Southern Appalachian Highlands and the Middle Atlantic States. This method imposes some dislocations and inconsistencies, but no serious difficulties. Knowledge of each large unit, as the United States or a continent, is built up synthetically, the natural regions, political divisions, economic products and industrial activities being studied in detail before the unit is presented as a whole. The pictures are made to serve as an essential part of the text by the use of extended legends and frequent reference questions. The maps are also distinctive, the standard set being (1) physical, showing natural regions sharply defined by shades of green and brown, (2) economic and commercial with names of products printed in red, (3) annual rainfall, (4) density of population, and (5) a combined relief, drainage and vegetation map in shaded tints of green and brown. Standard hachured and contoured maps are entirely discarded. The book embodies so many radical departures from generally accepted customs that its place and influence in the schools will be observed with unusual interest.

The legitimate offspring of Tarr and McMurry's text, showing ample evidence of heredity, and also some striking variations, is that of McMurry and Parkins (1921). On the physical side the geological matter is smoothly blended, and a scheme of land regions based on Fenneman's physiographic regions of the United States is cautiously introduced. The United States is divided into four groups of states, each of which is characterized by one or more dominant factors of economic response, and impressive comparisons are made between them. Considerable space is given to descriptions of industrial processes, from coal mining, iron and steel metallurgy, and textile weaving, to dry farming. Irrigation and the conservation of natural resources are liberally treated. Historical matter is freely introduced, and from the chapter on Northwestern Europe the pupil might get a good general knowledge of the changes in both economic and political geography resulting from the World War. In the general discussion of each continent, emphasis is placed on the basal maps, topography, temperature regions, rainfall distribution, plant types, and population. A leading feature in the organization of the book is a series of topics or questions, printed on the margin of nearly every page, which the adjoining text discusses or answers, thus placing before the student a definite problem,

[1] Annals of Association of American Geographers, Vol. VI, pp. 19-99.

and helping him to know always "where he is at." Each major section closes with a list of "facts to be especially well fixed," and a reasonable number of "problems for independent study," with detailed instructions for finding reference materials in libraries.

Another adventure in the field (or shall we say the wilderness?) of regional geography is embodied in Smith's *Human Geography* (1921). In this case the lands are divided into regions, "each of which possesses a uniformity of conditions affecting human life." They are fundamentally economic, but because all the physical conditions, position, relief, structure, climate, vegetation and the rest are given due weight and prominence, they fall little short of being natural regions in the broadest sense. The book is an essay in the elements of human ecology, and the basic plan is consistently carried out. Political boundaries almost drop out of sight, states and countries being used chiefly as convenient areas of reference for location and statistics. The Northern Wheat Region extends from Minnesota to Alberta, and the Southwestern Plateaus and Mountains include not only the Colorado Plateaus but the whole of the Mexican Highland. Old neighbors are sometimes widely separated and distant relatives are brought next door. New York City is not classed with Boston in the New England and Canadian Maritime District or with Philadelphia in the Northern Piedmont, but with Chicago in the Lower Lake District and St. Lawrence Valley, to which the Erie Canal Belt is an appendage.

It looks as though the type of textbook in geography for the grades which has prevailed for the past forty years is undergoing rapid mutation, and that the texts of McMurry and Parkins, Atwood and Smith indicate the direction of evolution. Regional geography is apparently passing from a political to a natural basis, and it may be hoped that physiographic regions, industrial regions, and economic regions will ultimately merge into geographic regions.

Teachers and Materials in Elementary Schools.—Of equal importance with the character of the textbook is the use made of it by teacher and pupil. A large majority of the teachers have had no instruction in geography beyond that obtained from the text in hand, and have never come in contact with a teacher who knew much more of the subject. The old memoriter, question and answer, method has prevailed, with the improvement that the teacher has had to formulate some of the questions, and the pupils have had to prepare themselves to answer questions which were not stereotyped. Many of the better teachers use the topical method which rquires the pupil to make an extended statement. Some are beginning to use the problem method, suggested by questions in the latest textbooks for independent or out-

side study. This method, at its best, appeals to primitive human instincts and arouses the interest and enthusiasm of research. If overdone, the pupil fails to acquire a broad view of geography and its scientific organization.

Exercise in the use of maps and atlases has been much neglected, and most pupils leave school with very imperfect ability to interpret the only form of technical expression in geography. For this there is now no reason except the ignorance of teachers. Textbook maps have been good for generations, and have now reached a high degree of scientific and artistic excellence. Wall maps have been multiplied and improved until the best are available in great variety. Judging from the increase during the last decade in the number of map makers and publishers, and the volume of their business, good maps are being freely bought and presumably used in the schools. At last, in 1923, a school atlas (*Goode's School Atlas*) has been produced in America which compares favorably with the best German, French and English works. The multiplication of pictures in light and shade and in colors, by many processes of photoprinting, phototyping, and photogravure, is one of the marvels of the age, and no school subject can profit more by their use than geography. Selected stereoscopic views and lantern slides of geographic subjects are within reach of all large schools, and new forms of projection apparatus are to be had, which do away with the need for specially prepared views. The use of moving pictures for geographic instruction has been introduced in some cities, and its possibilities are beyond calculation. Apparatus makers furnish relief models of typical forms, of states and continents, in which neither the vertical scale nor the price is excessive. Excellent material outside the printed word for teaching geography exists in bewildering variety, and there is some danger that the geography lesson may be converted into an entertaining show.

The most serious defect of geographic instruction in the elementary schools is its brevity. It generally begins in the fourth grade and is not continued beyond the sixth. The average pupil learns what he can between the ages of ten and fourteen and then drops the subject. Compared with the richness of the feast laid before him, both the time allowed for consumption and the capacity of the consumer are ridiculously inadequate.

Development of Secondary School Geography.[2]—The history of the development of secondary school geography in the United

[2] In this section free use has been made of the writer's previous paper, *The New Departure in Geography*, University of Illinois Bulletin, Vol. X, No. 19, pp. 136-143, 1912. Also the Journal of Geography, Vol. XI, No. 5, 1913.

States during the past century may be divided into five or six stages, each characterized by some dominant idea.

1. *The Gazetteer Stage.*—This kind of geography, dating from the time of Strabo, consisted of a description of the earth, giving statistics of location, area, population, government, products and social conditions of countries, states and cities. Only the great natural features were mentioned, such as mountains, rivers and arms of the sea. The only scientific part was astronomical and involved "the use of the globes." Globes properly made and mounted were used to demonstrate and solve a large number of mathematical problems in astronomy, geodesy and navigation. This has survived to our own day under the name of mathematical geography. The books of Morse and Parish (1812) are typical specimens, and are still not without interest for the geographer. About the middle of the last century they were displaced by something more palatable and

2. *The Wonder Book Stage* came in. Here the writer's personal experience begins. He has forgotten the title and author of his first Physical Geography and he would now give a good price for a copy. Perhaps it was Colton's (1867), Warren's (1863), Mitchell's or Montieth's. It contained descriptions of the more unusual, interesting and spectacular phenomena of the earth, such as volcanoes, earthquakes, geysers, cataracts, caverns, coral islands, salt lakes, icebergs, glaciers, ocean currents and waves, the will-o'-the-wisp, St. Elmo's fire, deserts, forests, and remarkable animals and races of mankind. The appeal was largely to the sense of wonder and awe. There was little or no attempt at scientific explanation, but frequent references to the power, wisdom and goodness of the Creator. The general tone was as pious as that of Sir John Mandeville's Travels, which it resembled in uncritical and credulous spirit. It seemed designed as much for religious as for scientific edification. The book was intensely interesting and gave students their first glimpse into the world of nature. Anybody could teach it and everybody liked it. Those were halcyon days for physical geography.

About 1873 the classic work of Guyot appeared and ushered in

3. *The Natural Teleology Stage.*—While the subject matter remained much the same as in the Wonder Book; it was organized and lifted to a high plane of teleological philosophy. It was enriched by the great generalizations of Humboldt on the origin of mountain ranges and the relations of vegetation to climate, and by the studies of Agassiz and others on the Alpine glaciers. Orographic, isothermal and plant zone maps and profiles, demonstrating the principal geographic relations of relief, climate and life, appeared. The plan of creation by which

the round world, with its continents and oceans, its great features, its plants and animals, had all been brought into existence, especially and solely as a congenial home for a variety of men, was the great theme. It was a development on the geographic side of Paley's argument from design, and was pushed to its ultimate and foregone conclusions. "The continents are made for human societies, as the body is made for the soul," Guyot writes. "The conclusion is irresistible that the entire globe is a grand organism, every feature of which is the outgrowth of a definite plan of the all-wise Creator for the education of the human family, and the manifestations of his own glory."

Nearly all of the great generalizations which Guyot taught so brilliantly and confidently have gone the way of his laws of relief and mountains by fracture. He was not in possession of sufficient facts and the facts he had were manipulated to fit into an artificial system. It has happened more than once in the history of human thought that the epoch when men believe that they have attained final and absolute truth is immediately followed by some discovery which upsets their conclusions and destroys their systems. It was Guyot's tragic fate to live long after the imposing structure of his science and philosophy was shown to be a castle in the air, and yet never to see that the doctrine of evolution had dissolved its foundations. His style was formal, stiff and grandiose and produced in the student's mind the impression that physical geography deals only with the remote and has nothing to do with the familiar land and sky at home. Yet by the introduction of European ideas and methods, by his broad view of the nature and scope of geography, and not least by the compilation and publication of a magnificent series of relief wall maps, Guyot contributed as much as any other one man to the advancement of geography in America.

The new learning and the new doctrine soon found its embodiment in textbooks which ushered in

4. *The General Physiography Stage,* using that overburdened word, physiography, in its etymological sense of a general description of nature. In 1869 Huxley delivered in London a course of lectures which were published in 1877 under the title of Physiography. He reversed the usual order, and began at home for Londoners with the Thames basin, thence branching out to rain, snow, ice, air, rivers, the sea, earthquakes, volcanoes, coral islands, the geological structure of the Thames basin, distribution of land and water, figure and movements of the earth, ending with the sun. Thus Huxley became the father of modern physiography.

This movement was not strongly under way in this country until the publication, in 1888, of Hinman's *Eclectic Physical Geography,*

one of the most remarkable textbooks with which the writer is acquainted. Rigidly scientific, even technical, in organization and method, it began with a chapter of elementary physics, and dealt in logical order with planet, atmosphere, sea, land and life. The author availed himself of the then unpublished researches of Abbe, Dutton and others and succeeded in making a book in many respects ten years ahead of its time. It knew nothing of the base level of erosion or the geographic cycle, but with these exceptions presented clearly all the great processes of land sculpture found in the books of today. In the chapters on life he presented boldly, and for the first time to American high school students, the doctrines of Darwin and Huxley, heredity, variation, adaptation, environment, selection, evolution. In the chapter on man he took the bull by the horns and his life in his hands, as he himself expressed it, and showed by a wealth of argument and illustration the affinity of man with the apes, and his probable descent from ape-like ancestors. The book was a great success and was foremost in the field for ten years.

5. *The Specialized Physiography Stage* differed from all the others in that its inauguration was formal and official. This was the publication in 1894 of the report of the Conference on Geography to the Committee of Ten of the National Education Association previously referred to in this paper.

The first textbook embodying the new ideas was Tarr's *Elementary Physical Geography* published in 1895. While retaining much of the old material, half the book was distinctly geological. The animus and initiative of the movement in the schools were distinctly due to Davis, whose pupil Tarr had been, and most of the books since published may be characterized as belonging to the Davis type. All others soon became out of date. In 1898 appeared the book of Davis and Snyder, which carried the geomorphological phase to its extremes, introducing many details and refinements of the new and fascinating science. The texts of Dryer in 1901, of Gilbert and Brigham in 1902, of Salisbury in 1908, and second books from Tarr and Davis, left little to be desired in the way of textbooks of this type. The most momentous thing about them was that physical geography ceased to be a merely informational subject and made strong claims for a place alongside of physics, chemistry, and biology, as a subject for laboratory and field work involving scientific discipline. This claim was received by teachers of other sciences with scepticism, if not hostility.

Dr. John M. Coulter, writing in the *School Review* for February, 1896, on the Correlation of Science Studies in Secondary Schools, said: "There are those whose purpose and method are purely informational,

subjects about which it is well enough that every intelligent man should be somewhat informed. Physical geography, astronomy, geology, physiology so-called, as mostly taught, all belong to this category, and are not included in the college demand for scientific training. They are necessary and exceedingly helpful subjects, but in the very nature of things cannot be handled in secondary schools other than as purely informational subjects. As such they contain no scientific training whatever, and such claim should not be made for them."

The gauntlet thus thrown down was taken up by Davis in the March number of the same Journal, and the possibilities of physical geography for scientific training were vigorously defended. Coulter's views were attributed to excusable ignorance and his positive assertion of them pronounced regrettable. To the same Journal, in 1896-7, Tarr contributed an article on the Teacher's Outfit in Physical Geography, designed as a guide to the selection and use of laboratory and library material, and another on Field Work in Geology and Physical Geography, based upon excursions around Ithaca, one of the richest fields in the world.

In the same years Brigham published in the *Popular Science Monthly,* a paper on the New Geography, maintaining that geomorphology, based upon the central principle of the base level of erosion, underlies the whole subject of geography, modifying or controlling climate, organic distribution and the history of man, and in an article in the *School Review* made strong and unstinted claims for physical geography in the high school. In a contemporaneous paper,[3] Dryer argued at length that the new geography is scientific and rational, that it has been enriched by the addition of geomorphology, making it preponderatingly a natural science, and that therefore it must adopt the scientific or laboratory methods of study and teaching. "Thus the new geography becomes able to give not only information, but scientific training; the ability to discover facts and to see their relations. It takes geography out of the list of memory or useful knowledge studies, and plants it in the quickening current of modern scientific thought."

Textbooks and laboratory manuals of physical geography multiplied, culminating in the monumental *Physiography* of Salisbury and the *Manuals* of Davis and of Tarr. All of them were widely used. The new geography was an overwhelming success and held the field for fifteen years, but its position did not remain long undisputed. Doubts began to be whispered around as to whether it was really

[3] Inland Educator, Vol. 4, p. 1. Studies in Indiana Geography, pp. 9-15.

suitable for the average high school. The high school freshman was said to be too immature and too unfamiliar with even the elements of the sciences involved in an understanding of physiography. To do it justice required a much larger outlay for space, time and material than any but the strongest schools could command. Competent teachers were very scarce indeed, and in the hands of one without special preparation, the work degenerated into superficial and confusing textbook study, without maps, pictures or apparatus, of little value for exact information and of none at all for scientific discipline. The doubters and objectors were little heeded and were generally overwhelmed by the enthusiasm and commanding influence of the leaders, who were mostly university professors.

The mutterings of dissatisfaction with the place held by physical geography in the high schools, almost to the exclusion of every other phase of the subject, grew louder and more frequent, and finally led to its modification and gradual displacement by textbooks and courses of study, which may be broadly characterized as belonging to

6. *The Biogeography Stage.*—This may be said to have been initiated by Davis, the father and sponsor of specialized physiography, who, in his vice-presidential address at the St. Louis meeting of the American Association for the Advancement of Science, in 1904, made a brief plea for the organization of what he ventured to call ontography, or the life phase of geography. This he defined as a study of physical controls and organic responses, a definition which he subsequently elaborated with characteristic fulness and force.[4] The movement was formulated and strengthened in 1909 by reports of committees of the National Educational Association and the Association of American Geographers,[5] which agreed in recommending the omission of extraneous matter, the abbreviation of many topics hitherto found in current texts, the expansion of many others more closely related to human life, and the introduction of a considerable amount of economic and regional geography, in one case of the United States, and in the other of the principal countries of the world.

Commercial Geography.—At this juncture, the strong current of physical geography, which had almost swept the schools off their feet, was joined by a modest tributary, which was destined to become in a few years the dominant element in a composite stream. It had its origin in what was known as Trader's Geography, which comprised

[4] Geographical Journal, Vol. 22, p. 413. Proceedings American Philosophical Society, Vol. 41, p. 222. First Year Book of National Society for the Scientific Study of Education, Part II.

[5] Journal of Geography, Vol. VIII, pp. 1, 159.

such information as was thought "useful for a merchant to know," and came to be called commercial geography. It dealt with facts rather than causes, and lacking rational interpretation, was "filled with dollars, and bushels and tons in lieu of principles." Its subject matter was largely a collection of facts and figures relating to various countries, possibly out of date before they could be printed, probably forgotten as soon as learned, and placed by Mill as a rubble heap at the apex of his pyramid of geography.[6] Attempts were not lacking to subject empirical facts to rational interpretation, but they were in most cases interpreted according to historical, political, legal and technical, rather than geographic principles. Various authors, having before them, as archetype and model, the monumental *Handbook of Commercial Geography* by Chisholm (1889-1923), produced textbooks adapted for use in high schools and commercial colleges. The more notable among them are those of Adams (1901), Trotter (1903), Redway (1903), Gannett, Garrison and Houston (1905), Robinson (1910) and Brigham (1911). Most of these texts devote twenty or thirty pages to a rather perfunctory discussion of topography, climate, soil and other physical factors which influence commerce, and 300 pages or more to the products and commodities of the various countries, and the part they play in world commerce.

Synthesis of Physical and Commercial Geography.—Toward the close of the first decade of the present century, something in the educational atmosphere led teachers in different institutions to conceive and execute, simultaneously and without collusion, three textbooks of a new type, each of which sought, in its own way, to become the go-between of a happy marriage of commercial geography to physical geography. The first in date of publication was the *Physical and Commercial Geography* (1910) of Gregory, Keller and Bishop, Yale professors of geology and sociology. They might have called their book "the science of environment," which they aimed to organize and exploit so far as it deals with the relations of physical environment to trade.

Part I, about one quarter of the book, is devoted to the physical environment, Part II, the second quarter, to the relations of man to natural conditions so far as they affect trade, and Part III, the second half, to the geography of trade as exhibited in the United States, British Empire and Germany. Illustrations are few and the treatment is generally too mature for students below the college grade.

In *High School Geography, Physical, Economic and Regional* (1911-12), Dryer attempted a larger synthesis, that of physical, com-

[6] International Geography, p. 6.

mercial, and regional geography. The earth is treated not only as a mechanism which "goes" and "works," but as a human planet, upon which men, somehow, get or make a living. The leading facts and principles of geography are considered as factors in the human struggle for a better living. Part I, about one half of the book, presents those physical features and processes which have directly "helped or hindered man in his progress," and each topic ends with a brief summary of economic relations, or the part played by the phenomena discussed in the life of plants, animals and men. Part II, about one eighth, presents a general outline of human economies or methods of household management practiced by the human family in their various terrestrial homes. Part III, about three eighths, makes use of a scheme of natural regions[7] based upon the Major Natural Regions of Herbertson.[8]

The continents and islands are included in forty four provinces, under five classes and fourteen types. The regions are fundamentally climatic, somewhat modified by phytogeographic conditions. North America is divided into twelve provinces, which with two from South America, represent all the world types. Each of these is named from its American representative, which is made a standard of comparison for other provinces. In this manner all the principal kinds of human adaptation to natural environments are discussed and their distribution shown. Political divisions are not ignored but are subordinated to natural regions, except in Europe, where human multiformities give them greater prominence. The book contains a large number of maps, which include relief, physiographic provinces, soils, coast lines, temperature belts, climatic regions, plant regions, natural provinces, human economies and population.

In *Elements of Geography* (1912), by Salisbury, Barrows and Tower, professors of geography in the University of Chicago, the authors express the belief that "all rational work in general geography must be founded on physiography and this fact has determined the organization of the material of this book." The scope is inclusive and more or less pertinent topics of geology are introduced and discussed with considerable fulness. The seventy-two pages on the atmosphere constitute a rather comprehensive treatise on meteorology and climatology. Eleven pages are given to the polar regions and twenty-two to storms and weather forecasting. In the treatment of climatic types an approach is made to the use of definite natural regions. A

[7] *The General and Regional Geography* of Unstead and Taylor, which adopts a similar scheme, appeared in England in 1910.

[8] Geographical Journal, Vol. 25, p. 300.

chapter of fifty-four pages on inland waters is an equally full discussion of an economic problem. The last third of the book is devoted to life relations, and exhibits the same unstinted use of instances and applications which characterize the physical chapters. The book spreads a rich geographical banquet for guests of varied tastes.

In Smith's *Industrial and Commercial Geography* (1913) the "commercial" strain reaches its extreme differentiation. The author aims "to interpret the earth in terms of its usefulness to humanity, and deals with human activities as affected by the earth, rather than with parts of the earth as they affect human activities." Part I, comprising more than two-thirds of the book, is given to a discussion of the principal industries of the world, and the story takes the reader to all lands and seas, as the scene of these activities shifts. Part II treats of trade routes and trade centers and shows how the various areas of production are linked together. To use the book to the best advantage, the student should have a good previous knowledge of physical and regional geography. The happy faculty of the author for telling an interesting story is favored by the treatment of the material by industries and commodities instead of by countries, as the authors of commercial geographies have usually done. But by this method geographical factors tend to appear incidental rather than vital, and the book might justly be called a treatise on industry and commerce, in which proper weight is given to geographical conditions. The 900 pages of the book can be fully utilized only by college students, and the author has published an abridgment, frankly entitled *Industry and Commerce* (1915) for high school use.

In a small book by Dryer, *Elementary Economic Geography* (1916), the facts and principles of industry and commerce are organized upon a geographical basis, and the limits implied in the term commercial geography are expanded into the broader conception of economic geography, or a study of the ways in which different peoples in different environments get a living. It seeks to make clear to pupils of the upper grades the meaning of economic geography by detailed stories about seven of the simpler peoples, whose natural environments differ as widely as possible. A plan is outlined by which the pupils may undertake a study of the economic geography of their own community. The bulk of the book is devoted to the economic geography of the United States, as an example of a complex society occupying a complex environment. The area is divided into five natural economic regions, Middle West, Eastern States, Southern States, Interior States and Pacific States, the characteristic industries of each are set forth in the light of their geographic conditions, and their relationships

with one another and with the world are made clear by graphic comparison and contrasts. The central idea is the influence of natural environment through industry upon human life, which makes the book an essay in social as well as in economic geography.

Huntington, with the coöperation of others, has recently brought out three books, covering the ground of geographic instruction from the upper grades to the university, which may, perhaps, usher in a new, if not final, stage of textbook development and be called

7. *The Human Stage.—Commercial and Industrial Geography* (1921) by Huntington and Cushing, in a textbook for the junior high school, which reviews the regional geography of the lower grades in relation to production, transportation, manufacturing and consumption, thus providing a different line of approach and new objectives.

Principles of Human Geography (1921) by Huntington and Cushing is a wide departure from the generalities of German *Anthropogeographie,* and the *spécialité* of French *Geographie Humaine.* Five chief features of man's geographical surroundings, location, land forms, water bodies, soils and minerals, and climate are conceived as acting both directly and through plants and animals, upon man. Each of these is taken up, in turn, not to dwell upon them technically or genetically, but to describe with sufficient fulness to make clear its effects upon human activities, as represented by material needs, occupations, efficiency, and higher needs. As a simple example, an extended account of the home and life of the Khirghiz nomads is given. The old familiar ground of the earth's form and motions, latitude and longitude, time, calendars, tides, seasons, and maps, is worked over as thoroughly as if the student had never heard of either. Continental location, configuration and structure, breaks and bridges, size, relief, and connections are developed from the tetrahedral theory, with their functions in the life of humanity as an objective. The formation of mountains and plains is stated in a couple of pages. "For practical purposes, it makes relatively little difference how a plain or mountain originates," but the difference between life on mountains and life in plains fills eighteen pages. The influence of the oceans and the use of inland waters afford opportunity for the discussion of many topics, some of them unusual, as health, recreation, sewage disposal, potash, phosphorus, and marine vegetation, and some expanded to unusual length, as fisheries, water barriers, harbors, water supply, and water power. Climate and vegetation are given four times as much space as minerals and power, because of their importance in determining modes of human life. Chapters in the world's diet, man's changing surroundings, and the influence of geographic factors on

politics and legislation, break up virtually new ground. The time has not yet come when human geography can be placed on a basis as scientific as that on which plant gography rests, but such work as Huntington's brings geographers measurably nearer to a science of human ecology.

Business Geography (1922), by Huntington, Williams, et al., sounds on the title page somewhat fantastic, but the name is neither a happy conceit nor a trick of advertising. The book justifies by its contents the novelty of its title. Designed for the use of Schools of Commerce of college grade, it marks the present terminus of the long road of evolution from the trader's geography of past centuries. It means the extension of scientific geography into a new field, or one hitherto but partially occupied. Everyone who exchanges products or prepares products for exchange is doing business, and that includes all civilized human beings except infants, invalids and defectives. Business is as much subject to geographic influence as other human activities. The introductory chapters consider the influence of climate, relief, and soil on production, the effects of race and health on business capacity, and the geographic basis of exchange, transportation and the distribution of power. Part II deals with business as evolved by typical communities, herdsmen, farmers, lumbermen, miners, metal works, manufacturers and merchants, and is a study of one important phase of social geography. The remaining half of the book discusses business conditions in Europe, Asia, India, Africa, Australia, Latin America, the United States and Canada, and is distinctly regional. There is seldom any wandering from the geographic point of view, and the reader is nowhere in danger of losing consciousness, or at least a subconsciousness, that he is learning geography as well as business.

The three books of Huntington are farther characterized by strong emphasis on the efficacy of the problem method of study. Each chapter is followed by a set of problems for the student to work out by independent research. They are not simple questions, the answers to which can be looked up in an hour, but real problems which enlarge upon and reinforce the statements of the text. A student or class, who should solve all the problems given in *Business Geography,* would accumulate a mass of material equal in bulk to the text itself. Data for many of them are provided in fifty pages of statistical tables.

The *Economic Geography* of Whitbeck and Finch (1924) is designed for use in the large and growing classes of University Schools of Commerce and Industry. "The authors have tried to emphasize cause and effect relations, and to show how peoples, in pursuing their

economic activities, have adjusted themselves to their geographic environment." The influence of physical environment is constantly stressed but a knowledge of the elements of physical geography on the part of the student is assumed. One-half of the book is devoted to the United States and Canada as an economic unit, the second half to the rest of the world. Political divisions, countries or nations, are adopted as units in preference to natural or geographical regions, as being of more practical value to the commercial and business world, and more familiar to the general public. Since the college student is presumably not to be caught by fine pictures, half tones are not numerous, but diagrams, graphs, cartograms, and maps are unstinted. No important problem of production, distribution and consumption with which the peoples of the world are struggling, except perhaps that of human labor, is left without presentation and lucid discussion. In the compilation of reference lists and statistical tables, a wise restraint is displayed.

A comparison of the *Business Geography* of Huntington and Williams with the *Economic Geography* of Whitbeck and Finch suggests that the former is the product of geographical philosophy, and the latter of geographical engineering. The two books mark the present culmination of a remarkable evolution of commercial geography.

The history of the evolution of geographic education in the United States, as indicated by the textbooks provided and used, is one of rapid expansion and differentiation. During the past thirty years most of the books have been written by college and university professors, who have not only kept abreast with the progress of geographic science, but have been themselves among the principal agents of that progress. The material presented in the textbooks of all grades is, in both quantity and quality, beyond the capacity of teachers and students to handle in the time allotted. It may be that future progress in the real geographic education of the masses will be in the direction of retrenchment and reform.

THE RELATIVELY LOW RANK OF GEOGRAPHY IN THE SCHOOLS.—Reports of textbook sales from publishers would, if available, furnish pretty accurate statistics as to the number of persons studying geography in the schools, and the kind of geography studied, but these are trade secrets and could not be obtained. Statistics from 500 of the 800 high schools in Indiana, compiled in 1920 by Shockel, shows that physical geography was taught in 250, commercial geography in 220, and regional geography in 80.

While geography is taught in all elementary schools, it suffers from many handicaps. Mathematics and language have maintained their

leading positions, but geography has been crowded out by a mob of new studies, until it is now generally dropped at the end of the sixth year, or pupil age of thirteen years, and there is ample time to forget it before it is taken up again, if ever, two or four years later. The opinion has generally prevailed among school superintendents and principals that no preparation is needed for teaching geography. It is all plain English, without technical terms or formulas, and any person of ordinary intelligence is thought fit to teach it. There has been no incentive for teachers to make special preparation and, until recently, little opportunitity. The same conditions obtain, with slight mitigation in the high school, where geography is often handed over to any teacher who has a vacant hour. In a certain large and opulent high school, in a city of 100,000 people, physical geography is this year taught by men who have been trained in chemistry, in physics, and in botany, which is certainly better than no scientific training at all. Geography has been aptly named "the Cinderella of school subjects." Under these conditions keen interest and professional pride in the subject has been only a personal idiosyncrasy. The organization in 1915 of the National Council of Geography Teachers, with the *Journal of Geography* as its organ and its subsequent extension into 28 states, enrolling 3,000 members, has accomplished much toward awakening an *esprit de corps* and arousing the ambition of teachers. High school authorities are beginning to wake up to the idea that geography is not a hopelessly elementary subject, but may be made one of the most complex and far-reaching of sciences, and that specially trained teachers are as much needed for it as for any other subject. Some of them regard it as a natural science, some as a sociological science; a few see that it is both and rank it more highly for that reason.

Geography in Normal Schools.—Opportunities for the training of teachers of geography are furnished by Normal Schools, Colleges and Universities. A survey of the status of geography in normal schools was made by Cooper in 1919-1920.[9] Data were collected from nineteen schools in the Far West and fifty-eight in the Middle West, Texas, Louisiana, Oklahoma, Tennessee, and Kentucky or about fifty-five per cent of the whole number in those states. Of the seventy-seven schools reported, forty-three employ but one teacher of geography and three employ four or more. This, of course, is largely dependent on the number of students in attendance. Geography teachers, as well as others, are generally overworked and have little time for research. The number of courses offered ranges from one to fourteen. Thirty-five schools offer five or more courses each. The number of required

[9] Journal of Geography, Vol. 18, p. 300; Vol. 19, p. 211.

courses rarely exceeds two, and in some of the schools which offer the largest number, all are elective. From such schools many students graduate without having had any instruction in geography. The variety and range of the courses is indicated by twenty-four different titles. The nature of the course is named *content* in 292 cases and *method* in 95 cases. From a study of 100 catalogues of Normal Schools made by Randolph in 1921, the following types of courses in two-year curricula were found; (1) review of elementary school material (academic), ten; (2) methods in elementary school material (technical), fifty-seven; (3) advanced courses in subject matter with professional outlook and attitude, thirteen; (4) advanced academic, fifty-two.

The notable points of the survey are the lack of uniformity in the rank accorded to geography in Normal Schools, the small amount required even in the strongest schools, and the popularity of the subject in the hands of a competent and enthusiastic teacher.

A story current in the traditions of one of the largest normal schools in the Middle West, illustrates a primitive attitude of such schools toward geography and is worthy of permanent record. In the early 70's geography was taught by a woman who devoted a whole term to the Great Plains. Her scientific knowledge of the Great Plains was nil, but she used the area as a frame upon which to display the principles and applications of the Hegelian philosophy, which could just as well have been hung on the door knob. Later a young man was employed as teacher of science who had had university training in chemistry and geology, and had lived a year on the Great Plains and Rocky Mountains. Most of his time was given to geography, which was made the organizing center of the sciences; but he was not permitted to perform experiments, or exhibit specimens or pictures during the regular class period. Such things were relegated to extra hours and voluntary attendance. The normal schools are still in various stages of escape from the bondage of such ideas. The President of a certain State Teachers' College, still in office, refuses to have his curriculum degraded by the admission of a subject so elementary as geography.

Geography in Colleges and Universities.—In 1897, the writer made a survey of the standing of geography in the Universities of Europe and America, and found in the United States but three professors of geography, Davis at Harvard, Tarr at Cornell, and Libbey at Princeton.[10] From seed sown in these centers, especially at Harvard and Cornell, has come the notable expansion of university geography during the present century.

[10] Inland Educator, Vol. 6, p. 7, Feb., 1898.

A study of Geology and Geography in the United States, by Matthews and Little of the National Research Council,[11] yields some information about educational opportunities in geography in 1920. They found that of 571 colleges, 401, or 70 per cent, offer no geography, and that of the 170 which do offer it, 65 do not go beyond physiography. They report that about 50 colleges offer courses in meteorology and climatology, 55 in commercial geography, 19 in the influence of geography on history, and about 30 in regional geography. Only 31 colleges offer more than two years of geography and only 6 offer four years or more. Their conclusion, that "the opportunities for training in geography are inadequate to supply the specialists demanded," is in some degree modified by the advances of the past four years reported in the following pages of this article.

The earliest college professor of geography in America of whom the writer has found a record belongs to Columbia College, where John Daniel Gross was professor of German and Geography from 1784 to 1795, and John Kemp was professor of Geography from 1795 to 1812.[12] The services of Arnold Guyot at Princeton from 1854 to 1880, and of Daniel C. Gilman, as Professor of Political and Physical Geography at Yale from 1863 to 1872, were not incident to any general growth, but local and personal sports.

The table on pages 144 to 146 has been compiled from the returns of a questionnaire sent in 1924 to all the State Universities of the United States, 44 in number, and to such other universities and colleges as the writer could find any reason to suspect might include geography in their curricula. About 200 questionnaires were sent and replies were received from 120 institutions. All the State Universities responded except North Carolina and Texas. The geographical distribution of higher instruction in geography, corresponds fairly well with the general distribution of conservatism and progress in education. Born in the Eastern States, its stronghold is in the North Central States. Ten states have no reported university or college geography, Arizona, Delaware, Georgia, Florida, Maine, Mississippi, Nevada, North Carolina, Texas and Wyoming.

Of the 56 institutions reporting the year of the introduction of geography, 45 dates, or 80 per cent, fall within the present century; but only 24 are subsequent to 1914. While the World War undoubtedly served as a great stimulus to geographic interest and education, substantial advancement was already well under way.

One of the outstanding features of the table is the demonstration

[11] Bulletin of the Geological Society of America, Vol. 32, pp. 227-248.

[12] Personal letter from the Secretary of Columbia University.

Status of Geography in Universities and Colleges

Institutions	Departments	Year of Introduction	Instructors	Courses and Students									
				Physiography		General Principles		Regional		Economic		Miscellaneous		Totals	
State Universities													
Alabama	Geol., Econom., Bus	1914	2	1						1				2	225
Arkansas	Geology		2	1		1		2						4	
California	Geography	1870	6	3						2	960			17	1,071
Colorado	Geology	1910	3					2	14			1	56	3	70
Idaho	Geology	1919	1			1	15			1	110	1	30	3	155
Illinois	Geology	1909	6	1		1	128	3	32	2	120	3	67	10	347
Indiana	Geology	1910	6	3	300	1	300	1	20	2	200			7	820
Iowa	Geol., Econom	1900	3	1	392			3				1		5	500
Kansas	Geol., Econom	1920	4	1	190	2	66	3	29	1	60			7	345
Kentucky	Geology		1	1	90									1	90
Maryland	Econom. and Bus		1							1	25			1	25
Michigan	Geography	1913	6	3		2	250	4	180	4	292	1		14	850
Minnesota	Geology	1923	2	1	20			2	40	2	130	1	100	6	290
Missouri	Geol. and Geog	1915	8			1	120	4	22	2	105	3	12	10	261
Montana	Science	1897	1	1	21	1	113	2	35	1	14			5	183
Nebraska	Geol. and Geog		3	1		2		5		2		4		14	
New Mexico	Geology		1					1	13			1	19	2	32
North Dakota	Geology	1908	4	3	42	1	102	1	9			3	33	10	285
Ohio State	Econom. and Soc. Geog	1912	10			2	351	5	94	8	407	1	80	16	932
Ohio (Athens)	Geography	1922	2					7		2		2		11	300
Oklahoma	Geol. and Geog., Econom	1920	2	1	400	1	60	5	42	2	26	1	15	10	543
Oregon	Geol., Bus	1916	2	2	14	1	26	1	4	1	200			5	244
Pennsylvania	Geog. and Industry	1892	17	1						5				6	1,111
South Carolina	Geology	1898	2	1	68					1	60			2	168
South Dakota	Geology		3	2		1		1						4	
Tennessee	Geol., Geog. and Mineral	1917	2	4	120	1	45	2	15	1	45			8	225
Utah	Geol., Business		4	1						5				6	
Virginia	Economics		3							2				2	
Washington	Geol., Econom., Bus	1895	3	4	8	1	12	2		2	180	2		11	200
West Virginia	Geol., Econom		2	1						1				2	
Wisconsin	Geol. and Geog	1903	12	5	68	1	240	4	111	3	368	7	79	20	866
Totals	31		124	43	—1,733	21	—1,828	60	— 660	54	—3,302	32	—491	234	—10,138

STATUS OF GEOGRAPHY IN UNIVERSITIES AND COLLEGES—*Continued*

Institutions	Departments	Year of Introduction	Instructors	Courses and Students									
				Physiography		General Principles		Regional		Economic		Miscellaneous		Totals	
Endowed Universities													
Brown	Geology	1906	1			1	84	1		2	10			4	94
Chicago	Geography	1903	15			2		1		4		26		49	
Cincinnati	Geol. and Geog.		2	2		2		3		2		4		13	161
Clark	Geography	1921	9			1	33	3	16	4	62	8	59	23	169
Colgate	Geology	1900	1	1	150			2	250	1	50	1	10	5	460
Columbia	Geol., Geog.	1784	18	13	130	3		4	60	10	282	5	125	35	597
Cornell	Geology	1892	4	4	90			3	38	1	26	5	143	13	297
Denison	Geology	1906	2	1	65	1	40	1	20			2	60	5	185
Denver	Bot., Zool., Econom.	1922	4			1	29			2		1	24	4	53
De Pauw	Geology	1921	1			1	12					1	1	2	13
George Washington	Geology	1919	1			1	60					1	75	2	135
Harvard	Geol. and Geog., Bus.	1890	2	2	9					3	65			5	74
Johns Hopkins	Geology	1902	2							1	30	1	7	2	37
Lehigh	Geol., Econom.	1904	3	4	155					2				6	155
New York	Geol., Commerce		4							11		3		14	
Northwestern	Geol. and Geog.		5			1	350	5	105	1	45	5	40	12	540
Ohio Wesleyan	Geology	1900	1					1	10					1	10
Princeton	Geology	1854	1	1	10									1	10
Rochester	Geology	1924	1	1		1								2	
Stanford	Geology		1	1	30									1	30
Tulane		1907	2	2	50					1	50			3	100
Syracuse	Geology	1918	4	2						2	364			4	364
Washington (Mo.)	Geol. and Geog.	1909	3			1	19			3	278	1	30	5	327
Wesleyan (Conn.)	Geology		1	1	70									1	70
Yale	Geol. and Geog.		4	2				2		2		2		8	
Totals.....25			92	37 —	759	16 —	627	26 —	499	52 —	1,262	66 —	574	219—	3,881

STATUS OF GEOGRAPHY IN UNIVERSITIES AND COLLEGES—*Continued*

Institutions	Departments	Year of Introduction	Instructors	Courses and Students									
				Physiography		General Principals		Regional		Economic		Miscellaneous		Totals	
Colleges													
Amherst	Geology	1917	1	1	40								1 40
Carleton	Geol., Econom		2	1						1			2
Cornell (Ia.)	Geology	1885	3	1	32			3	80	1	120		5 232
Dartmouth	Geol. and Geog	1920	2	1	20	1	80	1		1			4 100
Earlham	Geology		1	1	25								1 25
Hanover	Geology	1921	1	1	25	1	50						2 75
Lafayette	Geology	1922	2	2	8					2	22		4 30
Lawrence	Geology	1920	1	1	40					1	50		2 90
Middlebury	Geology	1922	1					1		1	40		2 40
Milwaukee-Downer	Geography	1914	1	1						1	8	1 43	3 51
Mount Holyoke	Geology	1904	1	1	21	1	19	1	11	1		2 14	6 65
Oberlin	Geol. and Geog	1910	1	1	12	1	14	2	7				4 34
Smith	Geology	1910	1					1	13			1 25	2 38
Vassar	Geol. and Geog	1919	2	2	41			3	13			1 9	6 63
Wabash	Political Science	1924	1									2 36	2 36
Williams	Geology		1					2					2
Wittenberg	Geology	1914	1	1		1	66	1					3 66
Totals	17		23	15 —	264	5 —	229	15 —	124	9—	240	7 — 127	51 — 985
Grand Totals	73		239	95 — 2,756		42 — 2,684		101 — 1,283		115 — 4,804		105 — 1,192	494—15,004

that Geography, the mother of all the sciences, owes her introduction to the upper circles of academic society to the kind offices of her recently debutante daughter, Geology, now seconded by Economics and Business Administration. In six universities, California, Chicago, Clark, Michigan, Ohio State and Ohio (Athens), and one college, Milwaukee-Downer, geography is organized in a department of its own. In Nebraska, Missouri, Oklahoma, Pennsylvania, Tennessee, Wisconsin, Cincinnati, Harvard, Northwestern, Washington (Mo.), Yale, Dartmouth, Oberlin and Vassar, geography shares a part of the title with geology or other ally. The entering wedge has been in almost every case, physical geography. In this connection the story is worthy of record that in one great state university, when some members of the faculty presented to the president a petition and brief for the addition of physical geography to the list of courses offered, the petition was rather contemptuously denied. A year or two later, virtually the same petition and brief were presented in behalf of physiography and the petition was promptly granted. Today physiography holds second place among geographic courses, but is generally treated as a part of geology.

Special efforts made to obtain a correct census of the number of students for the year or semester have not been wholly successful, and probably ten per cent should be added to the total given in the table. The prominence of the commercial, economic and industrial phases of geography in university instruction is decided, but general, regional, political, historical and social geography have not by any means been crowded off the stage. The more strictly cultural values of the subject have gained twice as much recognition as the commercial.

A question as to the general status of geography received the response, good, strong or growing rapidly from 51 institutions. One says, "Every day, in every way, growing stronger and stronger," another "Growing, especially the graduate work leading to higher degrees." A few cases report considerable opposition and competition by other members of the faculty. One says "Geography has greatly declined; hope for a new era under M——."

The growth of geography as a university study is one of the outstanding features of recent educational development. Estimates of its value and proper place will continue to vary even among geographers, but opinion may be expected gradually to crystalize around the view happily expressed by Adamson: "Still, geography has its own individuality, readily realisable if it be thought of as a great divide, shelving off on one side into nature study and science, and on the other into history and civilization."[13]

[13] J. E. Adamson, *The Individual and The Environment*, p. 76.

GEOGRAPHICAL SOCIETIES AND JOURNALS.—The progress of geographical education has been in no small degree favored by the work of geographical societies and the publication of geographic periodicals. The oldest and strongest of these is the American Geographical Society of New York, which makes its beautiful house on upper Broadway the center of many activities. Since its organization in 1852, it has published under different names a monthly or quarterly magazine of the highest rank, now called the *Geographical Review*. Its library of 90,000 volumes, and collection of maps and atlases unrivalled in America are open freely for the use of students. It expends large sums in the promotion of research and the publication of scientific memoirs.

The National Geographic Society of Washington, by the publication of its magnificently illustrated magazine, having a circulation of several hundred thousand copies a month, has probably done more than all other agencies combined to bring geography home to the people.

The Association of American Geographers, organized, on the initiative of William Morris Davis, in 1904, is said to be the only geographical society in the world, admission to which requires something more than two friends and a fee, membership being limited to " persons who have done original work in some branch of geography." By its annual and semi-annual meetings for the reading and discussion of papers, and the publication since 1911 of its Annals, it has effectually maintained the dignity of geography, as a subject worthy of serious attention in college and university education. It has been especially helpful to geographers and teachers, young and old, by giving them, amid the multitude of scientific societies, a home which they have felt to be their own, where they have developed an *esprit du corps,* and a professional self-respect unattainable through any allied organization, however hospitable.

No review of geographic education in America would be adequate without notice of the periodical, now in its 27th year, especially devoted to the teaching of geography. The *Journal of School Geography* was started by Prof. Richard E. Dodge of Teacher's College, Columbia University, in 1897. It was a part of that general movement initiated in the nineties by Prof. W. M. Davis of Harvard, which created modern geography in the United States. In 1910 it was combined with another similar publication under the title of the *Journal of Geography*. Up to that time the expense of publication had been borne entirely by Prof. Dodge, who paid the annual deficit from his own pocket. From 1910 to 1918 the *Journal* was taken over by Prof. R. H. Whitbeck of the University of Wisconsin. Its publication was

then undertaken by the American Geographical Society until 1920, when it was turned over to the National Council of Geography Teachers, and its Secretary Prof. George J. Miller of Mankato, Minn. "The *Journal* has been not only a teacher's guide, it has been a record of the development of geographic thought in America." The American Geographical Society has published an index to volumes 1 to 25.

SOME ESSENTIAL FEATURES OF THE GEOGRAPHY OF THE SANTA ELENA PENINSULA, ECUADOR*

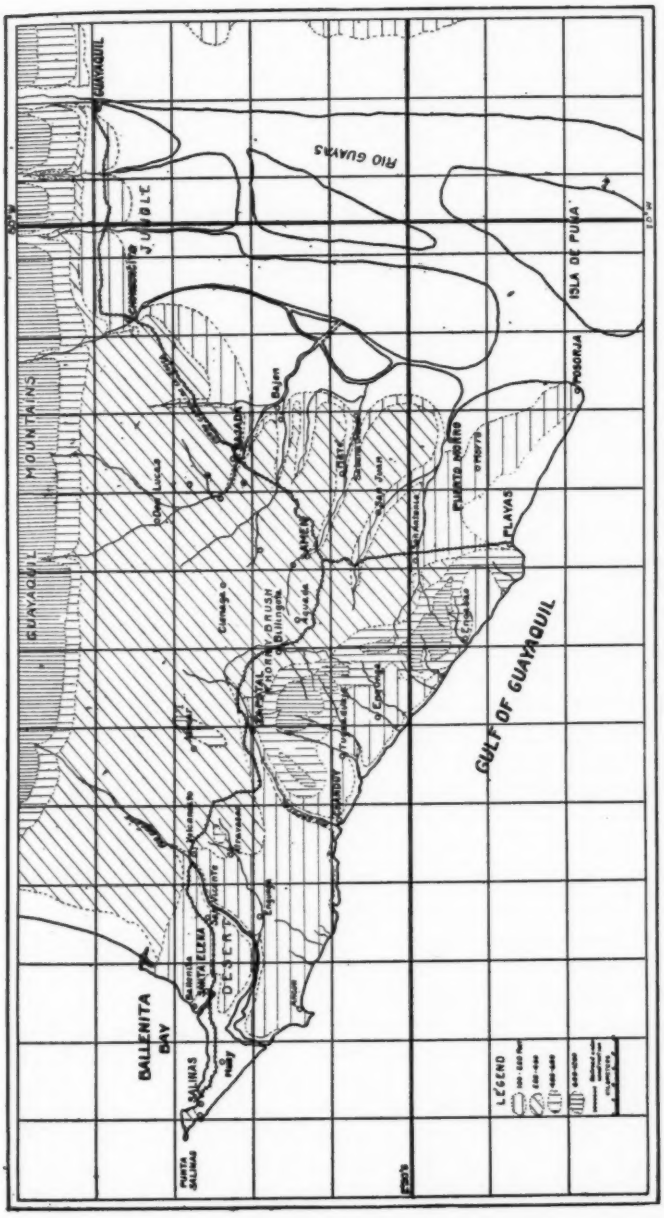
NELS A. BENGTSON

INTRODUCTION.—The Santa Elena peninsula of Ecuador is the area that extends approximately 140 kilometers west from Guayaquil, ending in the promontory known as Punta Salinas. (See Fig. 1.) On the south and east is the broad estuary of the Guayas River and the Gulf of Guayaquil. To the north is the Guayaquil Range of moderate height and even skyline, extending almost the entire distance from the foothills of the Andes to the Pacific coast near Colonche. The area is characterized by topographic diversity, geologic complexity, and by a climate which ranges from wet equatorial jungle type to that of a barren desert. Because of these sharp contrasts in environment encountered within short distances, the effectiveness of geographic influences is unusually well defined. It is the purpose of this paper to describe some of the more conspicuous geographic features and to point out their influences on the life and activities of the people of the region. The writer spent several months in the field in charge of a party engaged in detailed mapping and geologic study, but much of the data gathered was of confidential nature and cannot as yet be released for publication.

In this region the people live in scattered villages. There are no individual country homesteads such as characterize the agricultural regions of the United States. The village has been built where water can be obtained without deep drilling. The water holes are not numerous and, therefore, the villages are widely scattered. In most places the wells are made in the stream beds because the dry season is so intense that the courses become entirely devoid of surface water, and on the uplands water within reach of spade-dug wells cannot ordinarily be found.

The people in the peninsular area are mostly Indians and mixed breeds. Their activities are fruit raising, some production of corn, beans and rice, and pasturage of cattle and goats. Along the coast fishing from small boats and rafts is important in furnishing a livelihood. From our point of view all their methods are most primitive. Their manufacturing consists principally of the weaving of Panama hats, a type of art in which they have become experts. Foreigners have developed an important petroleum industry in the west end of the peninsula. Such, in brief, is the life and industry of the Santa

* Received at office of editor July 7, 1924.



THE SANTA ELENA PENINSULA
ECUADOR
(A TOPOGRAPHICAL SKETCH MAP)

Elena peninsula today. The influences which have guided this development are in large part geographic, having developed in response to the very interesting range of conditions of physical environment.

PHYSIOGRAPHY AND STRUCTURE.—Physiographically the region is the northern, emerged portion of the Guayaquil embayment area. The Guayaquil Mountains, which flank the region on the north, are monoclinal in structure, and are made up of silicified limestones which have south dips of 20°-30°. These limestones have been referred by Wolff and others to the Cretaceous Age. The Guayaquil embayment thus appears to be a structural basin flanked on the north by the aforementioned mountain range, on the east by the foothills of the Andes Mountains, and on the south by a series of ranges extending into northern Peru, where they bear the name Amotape Mountains. The Santa Elena peninsula, as such, is the northern portion of this basin, which has rather recently suffered uplift and resultant emergence from the sea.

Although ordinarily referred to as a part of the Pacific Coastal Plain of Ecuador, it is a region of great geologic complexity. Its structure has been affected by violent diastrophic activities, which extended into the early Tertiary times. The later diastrophic activities, as marked by the distinct terrace levels, have been characterized by massive uplifts unaccompanied by severe distortion. The westernmost point of the peninsula, known as Punta Salinas, consists of a mass of silicified shales, which by recent uplift has been raised to an altitude of 270 feet above sea level. This point has precipitous walls and is flanked by a terrace, the surface altitude of which is approximately 30 feet and in its bordering cliffs shows the severe distortion to which the shales have been subjected.

Above this distorted silicified shale is a veneer of recent material known as the Tablazo Formation. This deposit, which is horizontally bedded, consists of relatively young shells, some of which are of nearly modern forms. The surface material of the lowlands of the western part of the peninsula consists chiefly of fine sands and caliche.

Chanduy and Zapotal Mountains.—The plain east of Punta Salinas is for the most part of monotonous topography, only broken by some canyon-like stream valleys or *quebradas*. About 40 miles to the east one enters an area of fairly prominent mountains, the westernmost part of which is known as the Chanduy Hills. This range consists of block-faulted and tilted sandstones of varying degrees of cementation so that at present the top of the range is held by the exposed edges of these strata, which dip east-southeast at an angle of approximately 60 to 65 degrees. East of the Chanduy range and extending southeastward to the coast town of Playas are the Zapotal and Playas

Mountains. These mountains are made up of interbedded sandstones and shales, severely distorted, and reveal throughout an intensely folded and faulted structure. Their main axis runs northwest and southeast, but the crumpling evidenced in the structure is so intense that one wonders whether the structural axes bear any particular relation to the topographic axis. North of the Chanduy Range is a lowland occupied by the Rio Zapotal. This lowland was probably formed by an earlier erosion cycle which was terminated by subsidence and resultant sedimentation in the shallow marine waters. This is indicated by the fact that the present river channel seldom reveals any exposure of bedrock and it is flanked by extensive depositional terraces. Northward beyond the Zapotal depression is another small group of mountains, unnamed, but giving the same evidence of block-faulting as was referred to in the case of the Chanduy Range.

From the top of the Chanduy Range the landscape westward reveals the monotonous Pleisocene plain, which lies for the most part less than 200 feet above sea level. Looking north from the Chanduy Range, one views the Zapotal depression and the monoclinal mountains in the distance. Along the edges of the Pleistocene plain, where the older formations are exposed, the folding and faulting of Tertiary beds are plainly revealed.

Northeast of the Zapotal mountains and south of the Guayaquil range is the Amen embayment of older geologic age, the deposits of which have been elevated to heights of 300 to 400 feet and severely dissected, giving rise to a rather rugged, mature plains topography. In this structural depression, the recent uplifts have been massive and unaccompanied by severe distortion, the evidence of this being found in the gentle dips varying from 3 to 10 degrees, of the limestones and shales now exposed along the valley sides.

Summary of Physiographic History.—In resume, the topography of the Santa Elena Peninsula consists of slightly dissected coastal flats, maturely eroded plains, of moderate height, 300 to 450 feet above sea-level, and mountains, characterized by steep slopes, which rise to altitudes of 800 to 1,000 feet. The geological history of this area reveals periods of extensive deposition in Cretaceous times followed by intense crustal movements and displacements near the close of that period. Then in the Eocene period, there was again extensive deposition under marine conditions followed by intense faulting and displacement prior to the Miocene times. During the Miocene and Pliocene periods the western portion of the peninsula appears to have received no deposits, while in the Amen embayment between the Zapotal mountains and the Guayaquil Range, heavy beds of sands

and clays were deposited. In more recent times the entire area appears to have been uplifted, resulting in severe erosion in the Amen basin. West of the Zapotal mountains, comparatively recent uplifts have resulted in two distinct marine terraces above the present coastal plain, the upper one lying approximately 200 feet above sea level, the lower one less than 100 feet. The Coastal Plain in the vicinity of Salinas has an altitude that does not exceed 50 feet.

CLIMATE.—The rainfall of the Santa Elena peninsula varies from a reputed average of 90 inches or more at Guayaquil to practically zero in the western end of the peninsula. The rainy season lasts from December to May, reaching its climax in February. The effects

FIG. 2. Guayaquil. View along the Malecon to show covered sidewalks and cacao beans, curing in the street, preparatory to export.

of the heavy rainfall prevalent in the eastern part of the area, near Guayaquil, are seen in many ways, among them is the effect on the architecture of the city. (See Fig. 2.) The sidewalks are almost all under cover. This is well shown in the export section along the Malecon, as well as in the heart of the retail section along the Avenida Nueve de Oktubre. West from the city of Guayaquil one trvaels through the jungle country with its characteristic deciduous growth, then enters gradually into a region of sparser vegetation, whereupon turning southward to the coast, in the vicinity of Playas, desert conditions are encountered. This is an excellent illustration of the importance of altitude upon rainfall. The towns along the coast, having altitudes only slightly above sea level, have very little rainfall, while

the interior villages situated from 200 to 400 feet above sea level have copious rains. Westward, Santa Elena and Salina are typical desert towns. There it is reported that in some years no rain whatever falls. In other words, the closer you get to the sea the dryer it is in the Santa Elena peninsula of Ecuador.

Vegetation.—The vegetation responds, of course, to the rainfall. In the humid eastern section, the Ceiba tree is the dominant feature of the landscape. In the same class with it is the well-known Tamarindo and thence, going outward into the somewhat dryer sections, one encounters the Cascol, Jaboncillo and Seca. Here one also comes into the region of the perennial cotton trees with their ever-present flower

Fig. 3. San Vicente, a village a few miles east of Santa Elena, in the dry country. Here it seldom rains and it is never cold hence " windbreaks " suffice for houses.

and fruitage. Farther seaward is the transition zone from humid to arid conditions, where the deciduous vegetation of the jungle vies for supremacy with the cactus forms of the desert. A climb to the top of the Zapotal mountains carries one in the space of 900 feet vertically, from the desert at the base to the typical thorny jungle at the top.

Housing.—Housing, likewise, illustrates response to climate, as we may observe if we view the flimsy pole huts of the western part of the peninsula where the roofs are evidently made to protect from sunlight and are not very effective in shutting out rain. (See Fig. 3.) The pole hut perched seven or eight feet above the ground is constructed not in response to flood, mud, or heavy rainfall, but is rather a response to the desire to get away from the dust and the dirt which rolls along the land surface. The numerous ants, fleas and creeping animals such

as scorpions and centipedes furnish another reason for elevated floors. Only a short experience in the country is needed to convince one of the effectiveness of this influence. Farther eastward, although the vegetation is somewhat more generous, the poorly built houses still prevail. But there the roof begins to give evidence of some attention although the sides perhaps show little thought. Farther still and one gets into the region where much attention is given the problem of making water-shedding roofs. Here we see the houses of the poorer class equipped with crude ladders as the means of entry, floors that are characterized by their open spaces rather than by the planks, but the roofs are steep pitching and ingeniously constructed to shed the heavy rains. These typify the majority of the homes in the region. The school houses are of the same general architectural style. Perched above the dust, they have the advantage of breezy positions, and ventilation is provided at a minimum expense. The wealthy advertise their affluence to the world in the fact that they have regular staircases as means of entry to their houses and the roofs are made of tile. Such a house is referred to by the admiring neighbors as "La *casa grande* del Senor Peso." (See Fig. 4.) This is representative of the aristocracy in the Santa Elena peninsula.

INDUSTRIES.—*Petroleum.*—Industrial adjustment to resources and

FIG. 4. "La Casa Grande." Home of a well-to-do citizen. Note staircase and tile roofs,—these indicate affluence. Typical of the better class of homes in the humid eastern part of the peninsula. The poorer classes have thatched roofs on their houses, carefully made and rain-proof.

geographic environment is nearly perfect. The western portion of the peninsula has long been famous for its petroleum production. There, even now one may find active oil seeps that have not been subjected to the exploitation of man. In this area is one of the most interesting petroleum producing provinces that we know of, for here people may get petroleum by digging wells with spades. The depths of these pits vary from 50 to 200 feet. The petroleum seepage slowly gathers in the bottom of the hole and is then lifted out by natives going down on rope ladders and hoisting the buckets of petroleum out to be emptied into barrels. These are then rolled across country to the local refineries or to the seaboard. Some deeper wells have been made, varying from 300 to over 2,500 feet. In some cases the shallower of these wells are now being pumped by hand and wells so pumped give rise to a rather interesting local phase of the petroleum industry. Where such means of pumping is employed there is of course prima facie evidence of cheap labor. Some larger companies, financed by foreigners, have entered the field, erected standard derricks and obtained commercial production on the same plan as the operations with which we are familiar in the United States. The *Brea* of Ecuador and Peru was discovered by the Spanish navigators and Conquistadores who sailed their wooden craft along these shores. It was an important resource in aiding these sturdy navigators to keep their fragile craft seaworthy. Even now some of the heavy petroleum of the peninsula finds its greatest use in being burned in open vats until it reaches the consistency of heavy pitch, this to be used in caulking the wooden coastwise vessels.

Agriculture.—The agriculture is varied. In the extreme west, because of the very scanty rainfall, neither crops nor animals are important, and the fisheries are depended upon for food. Around Atravasao and Zapotal stockraising is important. In the dryer sections, goats represent the principal source of income and very nearly the only type of live stock seen. A man's wealth is measured in terms of the number of goats that he keeps. The family home is the second story house perched on poles in the goat pen. In the east section of the peninsula the tropical fruits are grown in abundance. Among them may be named bananas, platanos, oranges, melons, mangos and papayas. There are also patches of corn on the steep hillsides but nowhere do we find the use of any modern machinery.

Manufacturing.—The principal manufacturing industry is that of Panama hats. The Toquilla palm (*Carludovica palmata*) thrives best in warm, humid localities and hence is found along the alluvial and coastal lowlands. The shrub grows to heights of six to ten feet. The leaves are fanshaped and these are cut from the trunk just before

they open and are carefully cured so as to yield high quality "straw" for hat making. For the cheaper grade of hats no careful selection is made and the weaving is done at any time of day that the worker feels so inclined. For the finest hats, however, the greatest care is exercised in selecting the sprouts so that almost perfect uniformity of texture is insured. Only the finest strands are accepted, and the weaving is done at night, early morning or late evening when the air is at the desired humidity. Furthermore all the work on any one hat is done by but one worker in a family, so that when complete the hat thus made is perfectly uniform in weave, color and texture, much more nearly resembling a fine piece of cloth than it does the ordinary conception of a "straw hat." The fine hats are the products of weeks or months of painstaking labor while the common coarse Panama hats are made in a few hours.

After weaving, the hats are washed and bleached and it is not an unusual sight to find the village "Main Street" shut off from traffic due to the fact that it is being used for the purpose of sunning and bleaching the newly made hats in order to give them the finishing touches preparatory to market.

SUMMARY.—These are some of the essential features of an area of Ecuador that is commercially important and yet but little known. Entry to this area is through the Gulf of Guayaquil and the broad estuary of the majestic Guayas River. Here on the ebb and flow of the tide one sails for practically a day until finally at the head of the estuary we come into sight of the city of Guayaquil itself. Formerly known as a pest-hole of the Pacific, modern sanitary methods have been introduced with such success that it is now one of the cleanest and healthiest places on the continent. Its commercial life is very largely dominated by the cacao industry and in the lower section of the city great stacks of cacao beans in the streets are a common sight. (See Fig. 2.) The principal street has been paved, lined with electric lights and presents now the rather anomalous sight of a modern street of European type, upon which journey, as the most conspicuous element, the mixed breed Indians, which represent the bulk of the population of Ecuador.

Thus there are illustrated in this small area a series of conditions, mostly geographic, which guide the life activities in the Santa Elena Peninsula. Climate is the dominant influence with rainfall as its principal element. But rainfall is controlled by topography and hence within a few kilometers horizontally or within a few hundred meters vertically one experiences the change from jungle to desert with all the ramifying influences that such change involves in flora, fauna, and human pursuits.